



In order to meet design criteria, roof systems must fall into one of the following categories:

### I. Designed for Ponding

Roof systems may be designed to support maximum loads, including possible ponding of water from any source. See Section 1605.6 of the Uniform Building Code.

### II. Sloped for Drainage

If roof systems are not designed to support maximum loads, sufficient slope must be provided to assure drainage. Section 1506 of the UBC requires that roof systems be sloped a minimum of  $\frac{1}{4}$  inch in 12 inches for drainage. Section 1506.2 of the Uniform Building Code requires that roof drains be sized and discharged in accordance with the Uniform Plumbing Code. The intent of this section is considered to have been met if the following design guidelines are used:

- A. Vertical rainwater piping shall be sized in accordance with Table 1. The minimum drain size shall be 2 inches.<sup>2</sup>

Table 1/Minimum Vertical Drain Pipe Size <sup>1</sup>	
Horizontal Projected Roof Area (sq. ft.)	Minimum Drain Pipe Size (in.) <sup>2</sup>
900	2
2,750	3
5,750	4
10,813	5
16,875	6
36,250	8

<sup>1</sup> Table is based on a maximum rainfall of 3.2 inches per hour.  
<sup>2</sup> Diameter of round pipe, or smaller side dimension of rectangular pipe.

Where vertical walls project above a roof so as to permit storm water to drain to the roof area below, the number and size of drains shall be computed from Table 1 with the following adjustments:

1. For one wall, add 50 percent of the wall area to the actual roof area.
2. For two adjacent walls, add 35 percent of the total wall area to the actual roof area.
3. For two opposite walls of the same height, add no additional area to the actual roof area.
4. For two opposite walls of different heights, add 50

percent of the wall area above the top of the lower wall to the actual roof area.

5. For walls on three sides of the roof, add to the actual roof area 50 percent of the area of the inner wall below the top of the lowest wall plus the area of the walls above the lowest wall in accordance with Section II, Items A.2 and A.4 above.
6. For walls on four sides of the roof, add no additional area for wall areas below the top of the lowest wall, but add to actual roof area the wall areas above the top of the lowest wall in accordance with Section II, Items A.1, A.2, A.4, and A.5 above.

- B. Horizontal rainwater piping shall be sized in accordance with Table 2. The adjustments of Section II, Items A.1 through A.6 above shall also apply.

Table 2/Minimum Horizontal Drain Pipe Size <sup>1</sup>			
Horizontal Projected Roof Area (sq. ft)			Minimum Pipe Size (in) <sup>2</sup>
Piping Slope Per Foot			
1/8 "	1/4 "	1/2 "	
1,028	1,450	2,055	3
2,350	3,313	4,700	4
4,175	5,900	8,350	5
6,688	9,438	13,375	6
14,375	20,375	28,750	8
25,875	36,500	53,625	10
41,625	58,750	83,250	12
68,125	105,000	148,750	15

<sup>1</sup> Table is based on a maximum rainfall of 3.2 inches per hour.

<sup>2</sup> Diameter of round pipe, or smaller side dimension of rectangular pipe.

- C. Roof drains shall be of cast iron, copper, lead, or other approved corrosion-resistant material.

- D. Roof drains shall be equipped with strainers extending not less than four inches above the surface of the roof immediately adjacent to the drain. Strainers should have a minimum inlet area  $1\frac{1}{2}$  times the area of the pipe to which they are connected.

Roof deck strainers for use on sun decks, parking decks and similar occupied areas may be of an approved flat-surface type which is level with the deck. Such strainers should have an inlet area not less than

twice the area of the pipe to which they are connected.

- E. Roof drains passing through the roof into the interior of a building shall be made watertight at the roof line by the use of a suitable flashing material.
- F. For overflow scupper and drain requirements, see Section 1506.3 of the UBC.
- G. Roof drainage water shall not be allowed to flow over public property but shall be carried, in a drain pipe or other approved transport, under the public sidewalk or walking surface to the gutter unless one of the

following conditions exists and is maintained:

- 1. The roof drainage water results from Group R, Division 3 or U Occupancies.
  - 2. No curb and gutter improvements exist at any point along the site frontage or frontages on public property.
  - 3. Roof drainage water is deposited at a point or points on the site where the drainage swale is to a natural drainage channel that does not flow over public property.
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